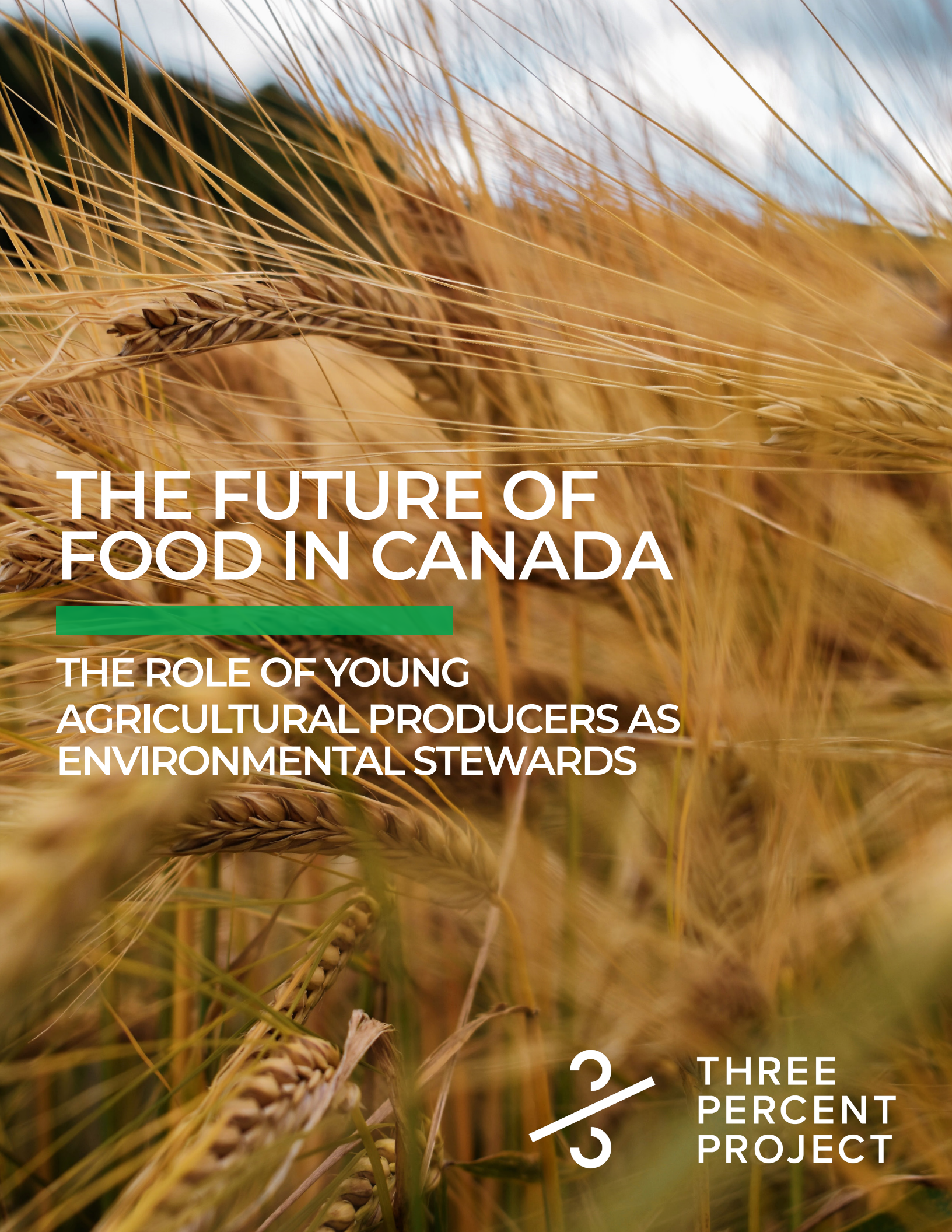

THE FUTURE OF FOOD IN CANADA

THE ROLE OF YOUNG AGRICULTURAL PRODUCERS AS ENVIRONMENTAL STEWARDS

THREE PERCENT PROJECT

ACKNOWLEDGEMENTS

Produced by 3% Project,
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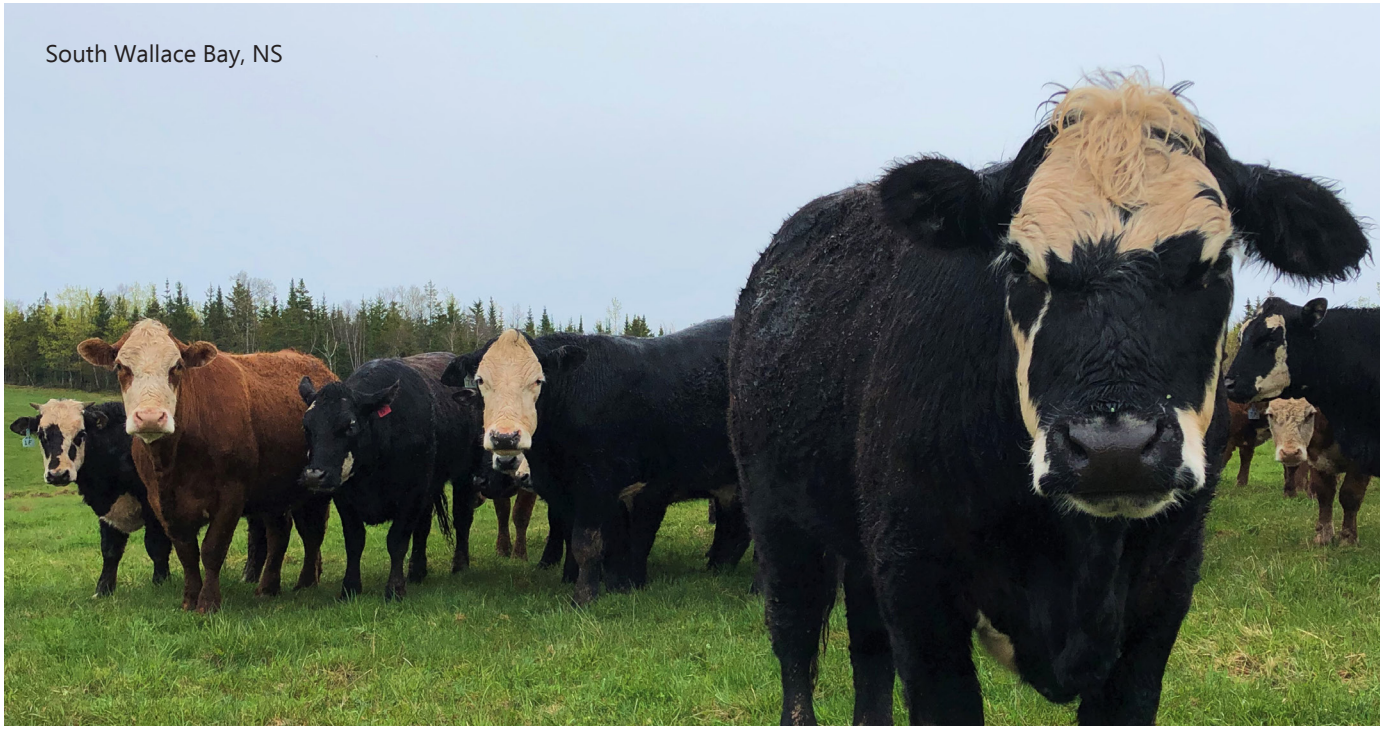
The Future of Food in Canada:

The Role of Young Agricultural Producers as Environmental Stewards

THREE PERCENT PROJECT
Empowering Canadian Youth



South Wallace Bay, NS

What we heard on the road across Canada: Agricultural Producers feel forgotten and villainized

Between 2017 and 2019, we listened to over 100,000+ students, drove 160,000+ km to 500+ schools in 400+ towns, and helped students undertake 100+ local projects. We visited every province and territory, mostly in rural communities from Ahousat, BC to Tuktoyaktuk, NT to Happy Valley-Goose Bay, NL.

We met with anyone and everyone who was willing to speak with us. We did not intentionally set out to talk about the agricultural industry, however when we spoke with farmers and ranchers we kept hearing the same story over and over again: they felt forgotten by Ottawa and misunderstood by the metropolitans, villainized as climate destroyers when in reality they take pride in being stewards of the land.

Standing Committees have already produced reports on these systemic problems

The Agriculture Standing Committees of both the House and the Senate have published numerous reports on these issues: the succession crisis[1], farm debt crisis[2], unfair trade policies and competition[3], supporting young people in agriculture[4], the climate crisis[5,6], etc. None of this is new information to the AGRI Committee.

As a result, when we sat down and spoke with farmers, ranchers, and researchers, there was a growing frustration at Ottawa for over a decade of incremental action, many feeling that **"the feds are out to get me. We've got a thumb pushing down on us."**

Of all the issues they could have discussed with some young people from Toronto, they chose to speak about the future of food in Canada.

We ourselves are not agricultural producers, we are just relaying what we have heard while on the road, lending our voice in urging the government to act.

We want to say thank you to all the agricultural producers we met while on the road, for taking the time to speak with us and sharing their lived experience. We acknowledge and thank Canadian Cattlemen's Association, Young Cattlemen's Council, Farmers for Climate Solutions, Young Agrarians, Canadian Forage and Grassland Association, and Food Water Wellness Foundation for speaking to us and in providing their expertise and feedback.

Not all views in this report represent each of these various organizations – they were consulted as information sources for this report since they represent many young Canadians who are leading the transition to a more inclusive, fair, prosperous, and sustainable agriculture.

Strategic federal investment can revitalize the health of our farm economy and reach emissions reduction targets

COVID-19 has exposed the greatest vulnerabilities of our national food systems: overdependence on multinational agribusiness for processing, lack of on-farm workers, and farmgate waste due to supply chain issues. However, beneath the headlines there is a confluence of impending crises: demographic, economic and environmental problems that young agricultural producers and governments will reckon with.

During times of austerity and economic recovery, emissions targets, climate mitigation and resilience measures can easily fall to the bottom of the list. However, the federal government can make strategic investments in agriculture that will both support the livelihoods of producers and reach our emissions targets. Decisions made today will impact young people around the world and the hope that we have for future generations.

In 2019, Canada ranked as one of the lowest developed countries in terms of agricultural subsidies and support. According to the OECD, subsidies accounted for 8.84% of farm receipts while the OECD averaged 17.75% with Norway topping the list at 57.63%.[34] The recommendations we are highlighting are not just about increasing subsidies but broadening the scope of our investment beyond just pushing export.

The EU and the U.S. prioritize the agricultural industry because they play a critical role in the vitality of rural communities, management of the natural environment, and provide a secure domestic food supply.[8] With the right financial incentives, we can revitalize the health of our farm economy and our environment.

According to the OECD, Canada's agricultural subsidies accounted for 8.84% of farm receipts while the OECD average was 17.75% with Norway topping the list at 57.63%.

We are losing young farmers at an alarming rate due to inequitable structural barriers

We are seeing alarming statistics when it comes to the future of food in this country. According to Statistics Canada, in the past fifty years **the number of agricultural producers has decreased by half**, yet total cropland is increasing.[9]

Approximately 3 out of 4 farms will be changing hands as the largest share of farmers, those between the ages of 55 and 59, will be looking to retire.[2] Despite this, only 8.4% of all operations had a written succession plan and there has been a 70% decline in the number of farmers between the ages of 15 and 34 inclusive.[9]

Though there was a 3% uptick between 2011 and 2016, we are still losing young farmers at twice the rate than farmers overall.[10] These numbers are not enough to sustain a thriving future agricultural sector in two to three decades.[11]

Young people are facing numerous structural barriers to enter into the profession. **Lack of profitability** is a key roadblock which can be attributed to a number of factors:

01. Increased costs and dependence on inputs, technology and loans. This results in agribusiness corporations capturing 95% of all revenues leaving farmers with 5%;[11]

02. Federal policies that focus on maximizing export while domestic producers are competing with cheap imports with lower health and labour standards;[8]

03. Increasingly unaffordable farmland; and

04. Overleveraged operations that make it difficult, if not impossible, for the next generation to take over.[11]

These structural barriers also have an impact on the environment

Policies crafted to tackle these problems must acknowledge the inequalities at play that have left producers at the bottom of the food chain when it comes to profits.

As the other players in the agri-food chain have extracted so much wealth from agricultural operations, **financial reserves are needed** to be able to invest in emissions reducing practices and technology. Without addressing the power imbalances taking place, solutions will just remain good ideas without the resources to be able to implement them.[11]

Some will argue that the consolidation of operations is more efficient, that technology has increased yields which means fewer farmers are needed. Though this is partially true, producers are faced with low prices they receive for their products and the high costs of conventional agriculture - therefore they must either expand to remain profitable or exit.[7]

Continuing on these trends will mean dire consequences to the preservation of endangered ecosystems like the prairie grasslands, increases in GHG emissions, soil erosion, hollowing out of our rural communities, and a lower capacity to provide organic food to meet growing consumer demand.[13]

Young Producers are increasingly environmentally focused and keep rural communities vibrant

Despite these challenges, young producers without a farming background are **attracted to agriculture for a variety of reasons**. Most notably, they want to:

01. **Contribute to socially equitable** food systems;

02. **Enjoy the emotional fulfilment** of working closely with the land; and

03. **Strive to preserve personal autonomy** amidst an increasingly monopolized and mechanized industry.[14]

According to a national survey of young agricultural producers, new entrants are increasingly coming from **non-farming backgrounds and are women**. They are also more likely to sell through direct marketing and engage in ecological production practices on smaller parcels of land of around 15 acres.

New entrants locked out of the traditional system look for creative ways to gain access to land and education. For example, they use land linking platforms such as FarmLink that matches new farmers with those without successors.

They also participate in grassroots peer-to-peer education and mentorship such as Young Agrarians' B.C. Business Mentorship Program that compensates farmers to mentor new entrants. In six years this program has resulted in a 43% increase in land production, 50% more revenue generated and 66% more food produced.[15]

Small scale producers are considered bastions of environmental stewardship by employing practices that improve soil and water quality, increase biodiversity, raise healthy and productive livestock and use natural inputs for ecological efficiency. They are also a vital contributor to vibrant rural communities as they are **more likely to invest in local economies** than larger operations, they encourage entrepreneurship, and prevent rural out-migration.[14]

There is also a greater willingness from younger and more educated beef producers to **support species at risk recovery** on their lands and adopt new grazing strategies than their older counterparts.[16] Young producers with a farming background are more likely to carry on their family operation and engage in conventional agricultural processes: sell for export, supply managed markets, auctions, brokers, contracts or elevators. They also work on much larger parcels of land, on average 650 acres owned and 160 acres leased.[13]

Young producers are more likely to **embrace the use of technology**[17], however their access is limited due to the high cost and the lack of high-speed internet access promised by the federal government for rural communities.[18] Despite all these challenges, young producers have more optimism about the future of agriculture.[12]

Agribusiness corporations captures 95% of all revenues, leaving farmers with 5%.

Supporting Young Producers in reducing emissions is so critical because it directly impacts our ability to produce food

We acknowledge that the Canadian Agricultural Partnership is focused on innovative and sustainable clean growth in the sector. We need every possible initiative to combat the devastating effects climate change will have on our agricultural industry.

The Prairie Climate Centre's "Climate Atlas Project" projects that if we continue our high-emissions trajectory, our prairies will warm to that of current day Northern Texas. As the temperature warms, we will most likely see **multi-year crop failures due to drought and extreme weather events** which threaten our exports and domestic food security.[11]

Agriculture and Agri-Foods data is already showing an increase in extreme weather incidents that are directly affecting agricultural producers such as flooding, Alberta's hail in June and Quebec's hottest and driest season on record.[15] Furthermore, agriculture's reliance on high input, monoculture cropland means increased levels of soil erosion, superweeds that are resistant to herbicide, and endangered native grasslands being converted to cash crops.[7]

Background: Where do agricultural emissions come from?

According to Agriculture and Agri-Food Canada, the agriculture sector is responsible for approximately 10% of GHG emissions in Canada, however this figure excludes emissions from the use of fossil fuels and fertilizer production.[19]

When we take a closer look at nitrogen fertilizer - to produce, transport, and apply one tonne requires the energy equivalent of two tonnes of gasoline. As a result, roughly 28% of emissions from the sector comes from this input.[11] The Canadian beef industry's total GHG production is 23.38 megatonnes (Mt), accounting for 2.4% of the country's total GHG footprint.[25]

The majority of conventional agricultural practices such as tillage, fossil fuel intensive fertilizers and biocides are harmful to the overall health of soils as they are antagonistic to the soil biological community and diversity.

In comparison, nature-based agricultural practices such as managed grazing, conservation cropping, intercropping and cover cropping nurtures soil health. This promotes its ability to be a carbon sink and increase resilience which is crucial when facing extreme weather events.[21]

The Prairie Climate Centre projects that if we continue on our high-emissions trajectory, our prairies will warm to that of current day Northern Texas.

Grasslands are endangered and they are a major opportunity for climate mitigation

Native grasslands are considered the most endangered and least protected ecosystem in Canada.[22] It is home to over 100 different species within a quarter section, sequesters 1.5 billion tonnes of carbon, and sequesters the equivalent of 3.6 million cars worth of additional carbon emissions per year.[23,35]

Agriculture and Agri-Food Canada's land-use and cropland inventory maps show a steady decline of native grasslands; as much as **95% of historical grasslands have been converted** to other uses.[24] When grasslands are cultivated, they can lose 30-50% of the carbon stored in the top layers of soil.[24] The carbon stored in the grasslands could be valued at $4.3 billion at $15/tonne, of which $11 billion has been lost due to conversion.

Despite Canadian prairie ecosystem services being worth twice that of the U.S., our neighbour has invested significantly more in researching its valuation.[22]

Continuing losses of grassland can be traced to the dismantling of the federal Community Pastures Program. In the 1930s, major dust storms expelled thousands of farmers from their land due to excessive cultivation causing a national crisis.

The federal government passed the *Prairie Farm Rehabilitation Act (PFRA)* in 1935 which stationed soil scientists and pasture managers, essentially government cowboys, to study and rehabilitate the land. The fee schedule for patrons to use the land to graze their cattle was proportionate to the private benefit they received, while the rest was funded by the federal government on the basis that it covered public benefits such as soil conservation, carbon sequestration and wildlife.[26]

The total private and public costs related to the *PFRA* in 2008 were approximately $22 million and yet **produced a value of $54.9 million** in benefits. Despite the low cost and success rate, the program was cut in 2014 since it was deemed to have fulfilled its purpose in restoring the grasslands.[26]

The federal government divested these lands to the provinces and cash-strapped provinces like Saskatchewan sold off the land to private owners who then had the burden of conserving this complex and significant ecosystem.[26]

Despite good intentions, private ownership led to mismanagement due to lack of knowledge, largely voluntary

The carbon stored in the grasslands could be valued at $4.3 billion at $15/tonne, of which $11 billion has been lost due to conversion.

conservation efforts, and a lack of compensation for providing public ecological benefits.[26]

Landowners take pride in their role as ecological stewards. However, with slim margins in beef production, volatile markets and declining profitability they are backed into a corner, choosing between prohibitive environmental management costs[22] or maintaining a livelihood for their families.

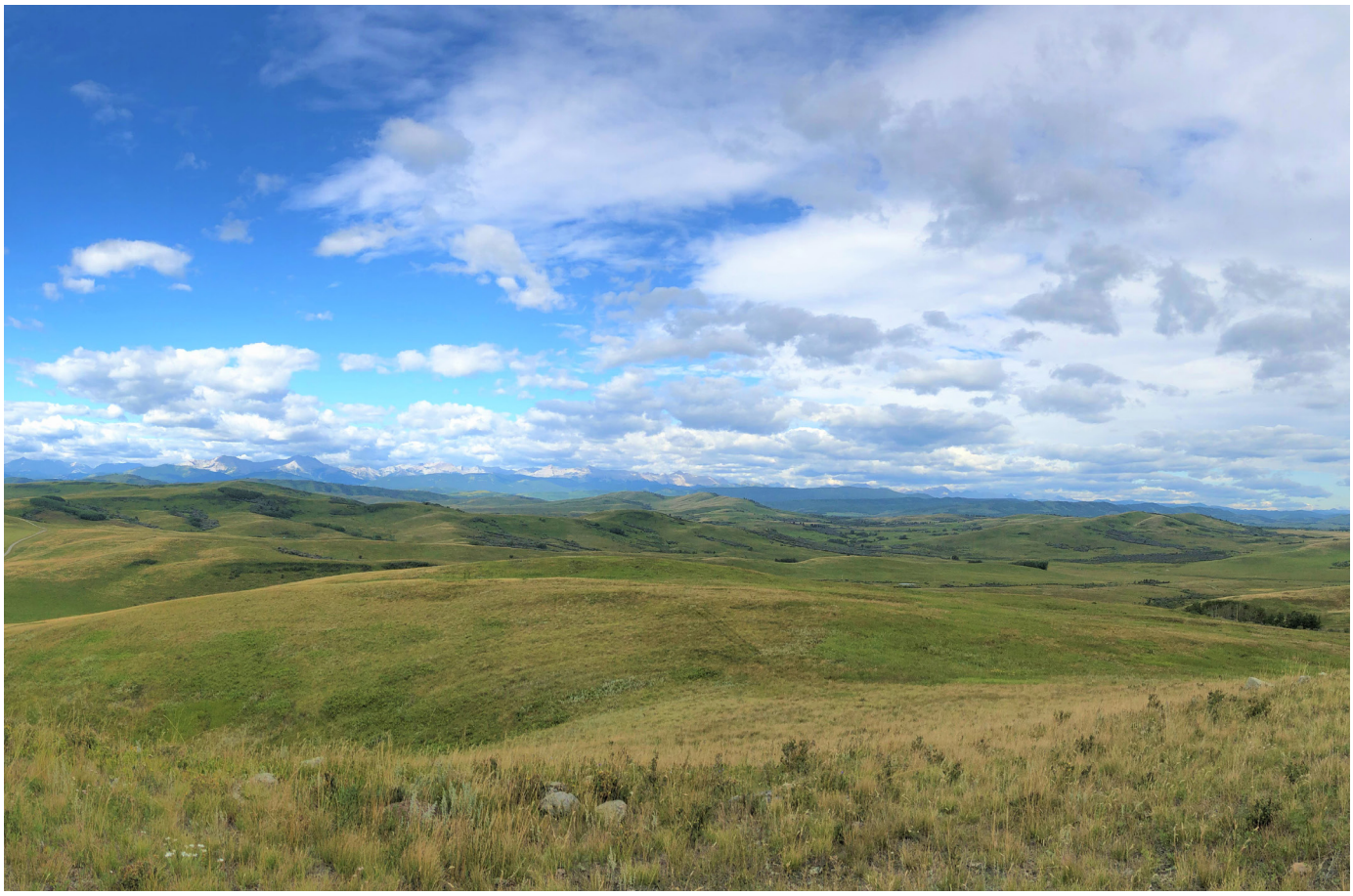
Tragically, approximately **2.4 million acres of grassland has been converted to cropland in the last three decades**.[23]

The grazing of cattle on grasslands has the potential to sequester vast amounts of carbon into the soil

Canadian beef has one of the **lowest GHG footprints per unit of production**, less than half of the world average.[25] This is partially due to the 8.2 million beef cattle in the Western Provinces that depend on grassland grazing since it is the least expensive feed source covering 12 million hectares.[24]

The North American prairie grasslands evolved to be grazed by tens of millions of bison on the land. Proper cattle grazing on native grasslands is an integral part of maintaining a thriving ecosystem and has the **potential to sequester vast amounts of carbon** into the soil.[11]

Vast grasslands in the Canadian prairies (Chinook Ranch, Longview, AB)



Though the beef industry is emissions intensive, with the right grazing practices, there is quantitative evidence of a positive role that beef cattle have in maintaining carbon stocks in soil.[27,28]

Most on-farm emissions analyses do not capture the impact of cattle on the landscape and the carbon losses that would occur from converting the grassland to annual/perennial crops. This would account for approximately 62% of the direct emissions resulting from beef production.[27] Cattle grazing on the prairies maintains its value, reducing the chances of it getting cultivated which would result in carbon release.[29]

Overall, grazing management influences soil carbon (C) sequestration through its effects on plant residues and community structures, and the redistribution of nutrients through manure. Prairie beef cattle's manure is a **valuable organic fertilizer** which reduces the need for expensive commercial fertilizers, however they do need to be managed properly to avoid runoff.[29]

Grazing reduces surface litters and cattle traffic enhances the breakdown of plant residues into the soil.[30] When soil C sequestration was included in the whole farm GHG analysis, net emissions per unit of beef decreased by up to 32% based on grazing management style until soil C reaches equilibrium.[30]

Technology has advanced and now soil carbon can be measured quickly and affordably using predictive soil mapping

There is a big interest amongst landowners to monetise the carbon stocks being sequestered through beneficial management practices. One of the biggest barriers is the ability to affordably and easily measure soil carbon stock.[31] However, now with innovative quantification and measurement technologies, additional revenue streams by selling carbon offsets can become a more common reality.

The Food Water Wellness Foundation is deploying digital map soil technology through the Alberta Soil Quantification Project by using predictive soil mapping, soil sampling technology, and spectroscopy. This monitoring will help landowners know **which management practices are actually working** in sequestering more carbon.[21]

Studies have shown that accounting for carbon sequestration reduced whole farm GHG emissions by 10% to 43% or even offset all GHG emissions making the operation **a net carbon sink**.[30]

The primary revenue source from the grasslands is beef production, so when beef prices are volatile, this not only

Studies have shown that accounting for carbon sequestration reduced whole farm GHG emissions by 10% to 43%, or even offset all emissions, making the operation a net carbon sink.

means economic disaster but already endangered grassland is more at risk of conversion.

Federal leadership is needed to incentivize landowners to maintain the grasslands[24], harness the full potential of the grasslands to sequester carbon, reduce emissions, increase biodiversity, and create an additional source of revenue to recognize the cost of stewardship.

With more and more consumers in Canada and around the world concerned about animal welfare, organic produce, grass fed beef with no hormones and antibiotics - **Canada's producers are well positioned to provide such value added products**. However, these producers who are also protecting the grassland must be supported to meet this demand and continue to restore this invaluable ecosystem.[7]

Young producers want to see past recommendations be implemented to improve retention through incentives and reduce emissions through new technology

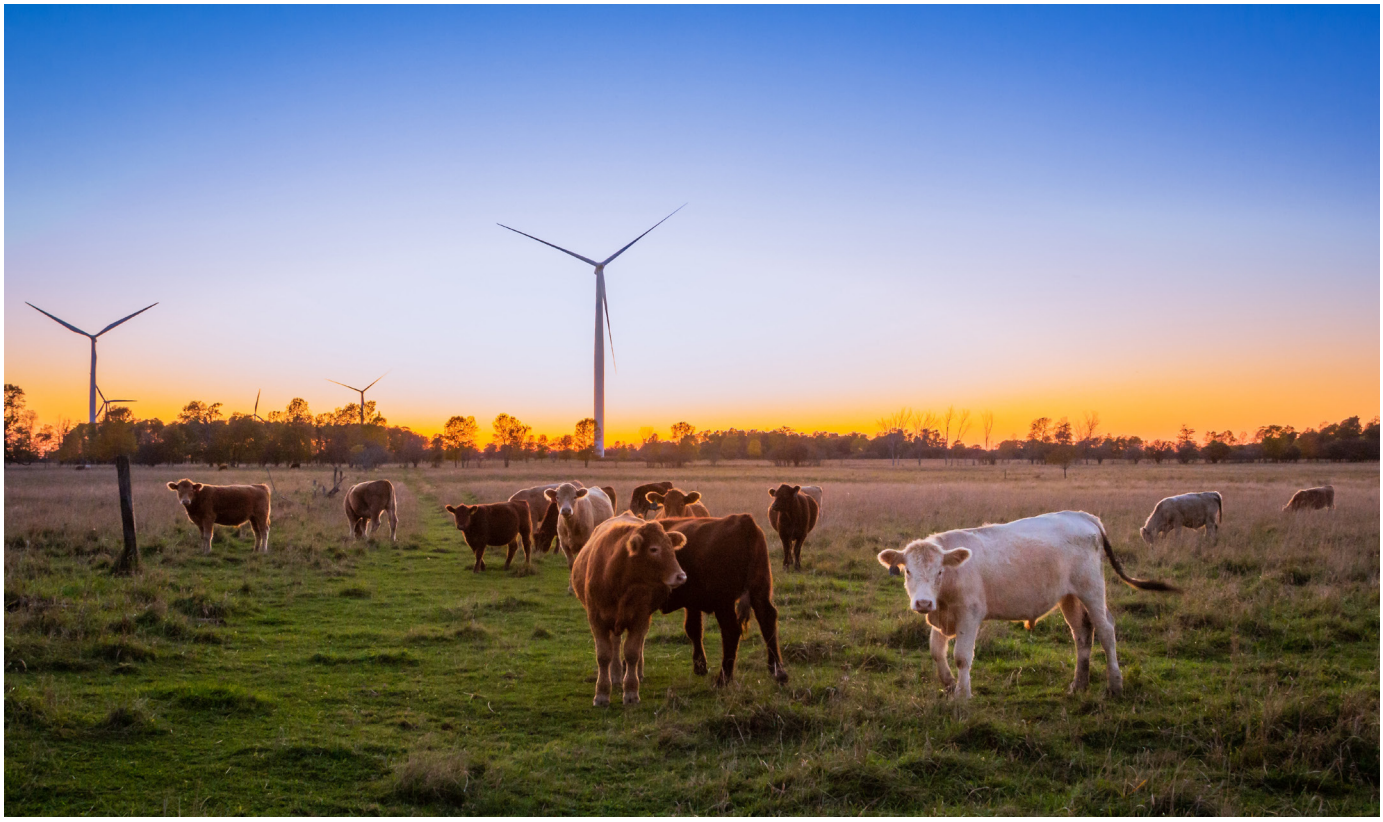
The Standing Committees on Agriculture for both the House and Senate have produced reports with recommendations covering the issues discussed.

From our conversations with young people across Canada, they want to see federal incentives that focus on:

01. **Increasing producer revenues** through ecological stewardship;

02. **Further research and development** of agricultural technology and sustainable practices; and

03. **Expanded education and mentorship**.



Wolfe Island, ON (Photo by Evi T. on Unsplash)

What are the Solutions?

Recommendation 1: The offsets generated from carbon sequestration to have access to the federal compliance market.

"Toward a Resilient Canadian Agriculture and Agri-Food System: Adapting to Climate Change." *Committee Report No. 11 - AGRI (42-1) - House of Commons of Canada*, May 2018, https://www.ourcommons.ca/DocumentViewer/en/42-1/AGRI/report-11/ at page 17.

Protocols have been developed for the voluntary market. However, there is no guaranteed buyer or price. Whereas the federal price for carbon is $20 a tonne and will rise $10 every year until it reaches $50/tonne. Landowners should have access to the federal compliance market so that they can receive the best price for their efforts and have it become a viable source of revenue.

Recommendation 2: Continue to fund research and extension services for sustainable practices on farms and ranches that build healthy, biologically diverse, and productive soils.

"Toward a Resilient Canadian Agriculture and Agri-Food System: Adapting to Climate Change." At page 41.

Independent government-funded research is needed to continue the industry's ability to reduce GHG emissions without compromising food supply, especially research that can be applied to farms and ranches on the ground.

Further research into **clean energy and biological processes** for organics can also be adapted to assist conventional farmers reduce dependence on synthetic fertilizers and herbicides while increasing net farm income.[11]

Recommendation 3: Use incentives such as Discounts to Encourage Resilience Building Practices

"Feast or Famine: Impacts of Climate Change and Carbon Pricing on Agriculture, Agri-Food and Forestry." *Senate of Canada - Standing Senate Committee on Agriculture and Forestry*, 11 Dec. 2018, https://sencanada.ca/en/committees/report/68959/42-1 at page 51.

Iowa farmers receive a $5/acre discount on their crop insurance when they implement resilience building practices such as cover cropping. Prince Edward Island also uses insurance discounts to incentivize environmental practices. It has been **widely adopted, well-liked by producers** and builds resilience for future extreme weather events.[15]

Recommendation 4: Succession Assistance

"A Growing Concern: How to Keep Farmland in the Hands of Canadian Farmers." *Senate of Canada-Standing Senate Committee on Agriculture and Forestry*, 9 Mar. 2018, https://sencanada.ca/en/committees/report/53194/42-1.

Canada needs federal leadership working with the provinces to create a farmland succession strategy, such as establishing farmland trusts which eliminates non-agricultural development, caps on the price of farmland, and limiting acquisition from private investment firms.

Quebec has a land linking service available province-wide to connect landowners and aspiring farmers. Other examples include:

01. **Federal incentives** to sell or rent land to new farmers;
02. **Exempt capital gains tax**, not just to family members, but to new entrants in the industry;
03. **Developing a national savings program** specifically for agricultural producers so that they do not have

to wholly depend on the sale of their operations to retire.[13]

Recommendation 5: Expand Education on Agriculture

"Young Farmers: The Future of Agriculture." Committee Report No. 7 - AGRI (40-3) - House of Commons of Canada, Nov. 2010, https://www.ourcommons.ca/DocumentViewer/en/40-3/AGRI/report-7/. at page 16

Agrology services were publicly delivered until they were defunded in the 1980s. One of the most significant barriers for producers is guidance on how to implement agroecological practices and how much it would cost.

Knowledge sharing, mentorship and on-farm demonstrations increases the chances for success and builds trust.[15] For new farmers, the programs that were ranked as the most useful were: informal farm workshops, field days, farm tools, paid or unpaid on-farm training through apprenticeships or internships and farmer-to-farmer mentorship programs.[13]

This can be accomplished in a number of ways, including:

01. **Expanding the existing Canada Job Grant Program** to include an agriculture stream;

02. **Accredited farmer mentors to receive funding** to conduct mentorships, create curriculum and standardized training;

03. **More funding to expand already existing mentorship programs** such as ACORN's Grow a Farmer Mentorship, Young Agrarians Mentorship Network, and incubators for farm start ups.

This will create additional streams of revenue for agricultural producers who can disseminate information on agroecology and best management practices that build climate resilience.[13]

Recommendation 6: Payment for Ecological Services (PES)

"Toward a Resilient Canadian Agriculture and Agri-Food System: Adapting to Climate Change." At page 17.

Agricultural producers already see themselves as environmental stewards. However, with their declining net incomes and increasing debts, they need to prioritize surviving over conservation.

Environmental stewardship initiatives by producers largely go **unacknowledged despite personal expense** and the benefits for the rest of the country. Examples of such initiatives include:

01. **Improving water quality** by expanding riparian buffer zones;
02. **Maintaining wetlands**;
03. **Protecting species at risk** by managing native prairie;
04. **Protecting land** that could be cultivated for wildlife;
05. **Paying high certification fees**; and
06. **Enduring the initial 5 years of low returns** to transition to organic.

Payment for Ecological Services (PES) can lead to tangible economic benefits. For example, in New York State, PES to maintain the land upstream avoided the cost of a $6 billion water treatment plant with $250 million in annual upkeep for a fraction of the cost. The Environmental Farm Planning Initiative which helped producers develop and implement environmental farm plans was discontinued in 2009.[25]

PES is already commonplace in the EU and WTO approved. Alternative Land Use Services (ALUS), a non-profit organization already provides PES across Canada.[8] In terms of policy, PES is considered **easy to administer** as payments are received for undertaking recognized management practices rather than comparing the value of output.[33]

Recommendation 7: Climate Action Incentive Refunds from the Industry Returned to Producers

The carbon pricing system should recognize the structural inequalities leaving producers the ones to bear the costs in the food system.

For example, carbon pricing levied against agribusiness input makers get downloaded to producers in the form of higher prices and truckers, railways and processors pass it down to farmers as lower farm-gate prices. The funds collected from these parties could be refunded directly to producers in recognition that they are price-takers in the export market and cannot download these costs to the end consumer.[11]

Recommendation 8: National Procurement Policies that Support Local First

National procurement policies could give preferential treatment to local and ecologically grown products. This would provide a more reliable income stream for these small to medium size operations and inject much needed investment into the local economy instead of continuing to depend on imported goods.[14]

Recommendation 9: Invest in Renewable Infrastructure and Battery Powered Machinery

There can be more incentives, grants, private-public partnerships or tax benefits to encourage renewable energy production, battery operated farm machinery and building retrofits on operations.[15]

In Canada, 5.3% of farms have a renewable energy source such as solar panels or wind turbines. They use these on-farm resources to cut costs or to tap into additional non-farming revenue such as using biodigesters and methane capture with feed-in tariffs.[17]

These investments could be multiplied and more widespread across the country, not just in provinces that are friendlier to these progressive policies.

Conclusion

Despite the number of young producers dropping, there are opportunities for growth in the industry.

The right federal incentives can create multiple benefits including increasing net farm income through PES, offsets and discounts for best management practices, the maintenance of ecological goods and services that all Canadians benefit from, and rural investment preventing some of the out-migration to cities.

Though young producers face many challenges, they are optimistic about the future of the industry. Investments made today will assist them as they navigate the changes necessary to become more sustainable and resilient to climate change.

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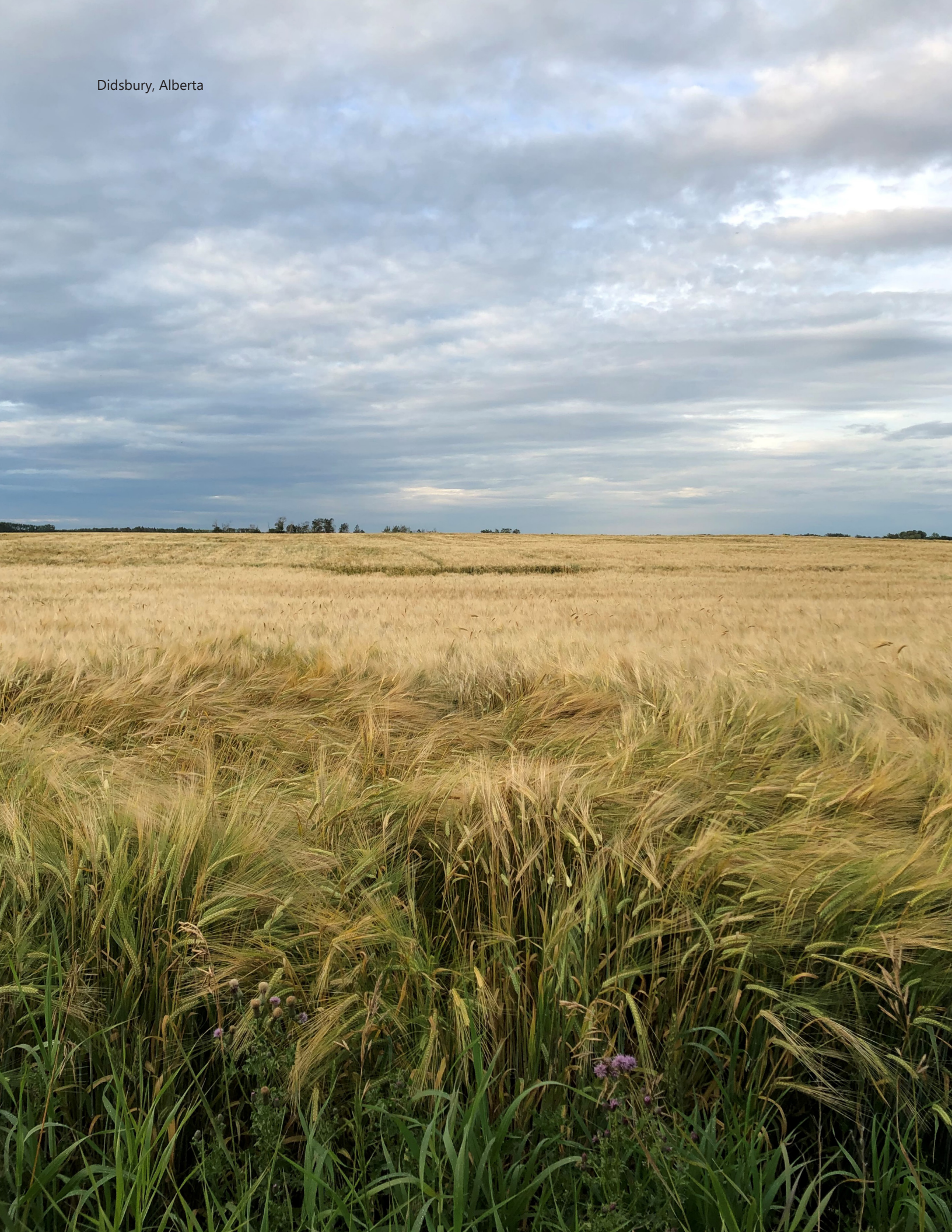
Didsbury, Alberta

The Future of Food in Canada relays what we have heard from farmers, ranchers, and researchers across Canada. We seek to lend our voice in urging the government to act.

Though young agricultural producers face many challenges, they are optimistic about the future of the industry.

Investments made today will assist them as they navigate the changes necessary to become more sustainable and resilient to climate change.